

# **Computerized Maintenance and Management System**

by

Norhasfaliza Hashim

A final report submitted in partial fulfilment of  
the requirements for the  
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(Information and Communication Technology)

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CERTIFICATION OF APPROVAL

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Approved by,

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(Miss Kavita K Sugathan)

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TRONOH, PERAK

July 2006

## **CERTIFICATION OF ORIGINALITY**

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



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NORHASFALIZA HASHIM

## ABSTRACT

Computerized Maintenance and Management System (CMMS) is an application that is used to manage the assets in an organization. This system can reduce the waste of space and time as compared to the old or manual paper-based system. The CMMS software is built as a web-based application, using the Internet as the medium to make it accessible from anywhere in the world for a better, easier and faster asset management. The designed system requires only a computer machine as a server where it is installed at. Any other computers will have the ability to access the system as long as it has an Internet browser. The knowledge management strategy has been applied to the system. The forum and history features in the system allow the process of knowledge sharing between human and software, as well as human and human.

Chapter 1 will explain on the introduction of this report. It explains about the background, problem statement, objectives and scope of studies for this project.

The next chapter is Literature Review and Theory. It will explain about the theory of KM and CMMS. It also includes the related journals, articles and findings on the KM and CMMS.

Chapter 3 will explain on the methodology of the project. The author uses the prototype model for definition and development processes of the CMMS. This methodology allows redoing the requirement definition, system design, coding and testing until the system completion.

Chapter 4 will cover the Result and Discussion part where it includes the research findings, where it explains on the researches that have been done by author. Result discussion explains the actions taken by author to meet the objectives of the project.

The last chapter consists of Conclusion and Recommendations part.

**Keyword:** CMMS - Computerized Maintenance and Management System, Knowledge Management, knowledge sharing, explicit knowledge, tacit knowledge.

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# **CHAPTER 1**

## **INTRODUCTION**

The efficiency in managing the knowledge causes big impact in the field involved, such as organization management, software development and educational systems. Sir Francis Bacon (1597) said that knowledge is power and for the knowledge management, the focus is “sharing knowledge is power”. With the technologies nowadays, such as internet, people around the world are connected to each other and able to share their knowledge with each other at anytime, anywhere without limits.

The main idea behind the development of the CMMS system development is basically to computerized the manual way of storing information regarding assets and properties such as computer hardware and software in a company, for example. The most commonly used manual paper-based assets and properties management and maintenance system requires a lot of space. Also, it consumes a large amount of time and need a big number of human resource as well as other office-ware resources.

### **1.1 Background**

Computer is an intelligent machine that enable human to perform their tasks in an easier, smarter and faster way. The technology movement is very fast, since many applications and software has been developed to meet the rapidly changing requirements and high demand of the market. A computer is an electronic device that performs pre-defined or programmed computations at a high speed and with greater accuracy as compared to those of manual. Not to



mention that it is a machine which is used to store, transfer, and transform information (dept.seattlecolleges.com, 2006).

Internet is the worldwide, publicly accessible network of interconnected computer network that transmits data by packet switching using the standard Internet Protocol (IP). It is a "network of networks" that consists millions of smaller domestic, academic, business, and government networks, which together carry various information and services, such as e-mail, online chatting, file transfer, and the interlinked Web pages and other documents of the World Wide Web. Internet allows people to do many things no matter where they are and how much time they spend. The computer and internet usage can optimize human's daily tasks. For example, they can pay bills online when they are on vacation over the world. It is proven that the Internet usage can make human daily task easier and faster.

## **1.2 Problem statement**

The major problem with most of the maintenance management is the heavy flow of collecting data for all types of equipment and arranges them into schedules and analysis reports. It is hard to maintain and keep all the data in hardcopies and manual way. It will consume more time to find and revise for the collected data and require more space to keep all those hardcopies. Paper-based system will cause difficulty in finding the histories of the equipments and assets. The papers with data may be eaten by insects or may be broken by weather instability. Moreover, the person in charge the data and the equipment itself may retired or left the company. This may create another problem, where they cannot track the possible problem and take longer time to find the required solutions. Sometimes, companies and organization do not realize that the value of knowledge is important. They do not manage their employee's knowledge very well. This will cause the knowledge waste and other related problem such as in making more accurate or feasible decision when any problem occurs. This system will implement the knowledge management strategy, which is

knowledge sharing in managing the asset and intellectual property of the companies and organizations. The knowledge management strategy will be explained further in the next chapter.

### **1.3 Objective and scope of studies**

#### **1.3.1 Objectives**

There are three main objectives for this project. The first objective is to do research on knowledge management area, which is the new field of studies today. The research is focusing on the knowledge sharing concept. Most of big organizations are trying to implement this concept in order to optimize the use of intellectual capital of an organization.

The second objective is to develop and complete the Computerized Maintenance and Management System. The third objective is to implement the knowledge sharing strategy into the Computerized Maintenance and Management System. The knowledge sharing strategy can optimize the knowledge shared between employees and allows the creation of new knowledge. The implementation of knowledge sharing strategy can save time and cost of the organization's management and operation.

#### **1.3.2 Scope of Study/Work**

This project includes researching, designing and developing the system, in order to achieve the objectives. The goal of this project is to optimize the knowledge shared between human itself and human and system.

To do research in knowledge management, many types of resources have been referred such as books, journals, articles and paper work. Each

resource provides similar information with own opinion and examples. In order to achieve the third objective, which is implementing knowledge sharing strategy into the system, the concept of knowledge management and knowledge sharing must first be understood.

To complete and develop the CMMS, the author has do research on this software and how it works. The requirements and functions have been defined earlier by the user. The author needs to study on how to use the development tools, which are Macromedia Dreamweaver MX 2004 and the MySQL server. The author also has learned on the advanced PHP, MySQL and CSS in order to enhance the functions and interface of the system. The system development and design will be explained further in the next chapter.

## **CHAPTER 2**

### **LITERATURE REVIEW AND/OR THEORY**

Knowledge management is the way of organization to gather, manage and use the knowledge that they acquire. Knowledge management programs are typically claimed to be tied to specific organizational objectives and are intended to lead to the achievement of specific targeted results such as improved performance, competitive advantage, or higher levels of innovation (Wikipedia).

There are two main types of knowledge that involve in knowledge management, which are tacit and explicit knowledge. Explicit knowledge is knowledge that has been or can be articulated, codified, and stored in certain media. The most common forms of explicit knowledge are manuals, documents, procedures, and stories. Knowledge also can be audio-visual. Works of art and product design can be seen as other forms of explicit knowledge where human skills, motives and knowledge are externalized (Wikipedia).

Tacit knowledge is refers to a knowledge which is only known to us and hard to share with someone else, which is the opposite from the concept of explicit knowledge. The terms “we know more than what we can tell” briefly describe the concept of tacit knowledge. This type of knowledge consists often of habits and culture that we do not recognize in us (Wikipedia).

Knowledge management should be applied in all organizations so that the skills and knowledge can be shared among the people and not wasted. By capturing key

knowledge before experts retire or leave the firm, knowledge retention can be increased or building the institutional memory or knowledge base via knowledge management efforts. Communities of practice in which people have shared trusts, beliefs, and values are components of knowledge management programs that give people sense of belonging and allow lessons learned to be shared.

Sharing knowledge is power (Sir Francis Bacon, 1597). With the technologies of Web-based and intranets, people have the connectivity to bridge across isolated islands of knowledge. People around the world are able to share and gather knowledge without boundaries. For example, a forum that gives support services for Apache server user. People around the world are able to ask, give solutions and discuss about the problems in using the server. They can share their experience, skills and knowledge in order to help others. This will give benefits to both sides which they can also share their opinion at the same time.

Knowledge management involves identifying and capturing knowledge. After the knowledge has been captured, it can be shared with others. Then, individual will apply this shared knowledge and internalized it using their own perspectives. This may produce new knowledge, which then need to be captured and the cycle starts over again. The life cycle figure can be viewed in Chapter 3.

Computerized Maintenance and Management System is computer systems that schedule, track and monitor maintenance activities and provide cost, component item, tooling, personnel and other reporting data and history. CMMS systems can often be interfaced with production scheduling and cost systems, and may be used to follow preventive maintenance policies. CMMS is also known as Enterprise Asset Management (Wikipedia).

The system consists of hardware solution and a software package that allows an organization to manage the maintenance of equipment and facilities. CMMS is able to improve the productivity, lower overall operating costs, and store valuable information

about maintenance functions in an organization. It comes with multiple and usable functions that can optimize the efficiency of the asset maintenance and management in an organization.

Using the web-based CMMS, people can easily analyze, report, and manage multiple facilities anywhere since they have the computer and internet access. Using the system, they can “submit” critical executive summary information to this system so they can examine at any time from anywhere. This will make tasks completed easier and faster. There are many benefits in implementing the system in the organization, such as increase asset life, track maintenance costs, prevent and predict equipment failures, improve labor productivity, reduce costly equipment downtimes, minimize investments in inventory, and lower the total cost of maintenance.

On December 2003, pKADS(portable Knowledge Asset Development System) has been developed and launched by United Nations Population Fund. This system applies the knowledge sharing strategy. The main purpose of this system is to capture and share the knowledge within organization. Combined with appropriate workflows and organizational commitment, pKADS can help organizations implement effective knowledge sharing practices (Business Information Systems of University College Cork, 2003). This system has also implemented as a web-based application where it can be accessed from anywhere. This system has been used as the reference to implement knowledge sharing strategy into CMMS.

MX4™ is an example of web-based computerized maintenance and management system. This type of software is more popular because of people's familiarity with the Internet. Internet users find Software based on Web Browsers very easy to use. They can have this installed at their site or hosted on the vendor's servers, meaning that no software installation or maintenance is required. It also provides mobile MX4™, so user can create work orders on the fly. This system provides more effective functions that can make the asset management easier and faster.

In this paper, the author will present the method of producing the CMMS that implement the knowledge sharing strategy. As a result, the end user will be able to share their knowledge and thoughts with others faster and with lower cost. The methodology is discussed in the next chapter.

## CHAPTER 3

### METHODOLOGY / PROJECT WORK

Throughout the project completion, this project implies two main activities. The first activity involved is information mining and construction of system architecture. The second activity involved is the system development with the use of programming tools.

#### 3.1 Methodology

This prototype model methodology has been chosen because it can reduce the amount of time until the user begins to see a working prototype. Figure below shows the prototype model:

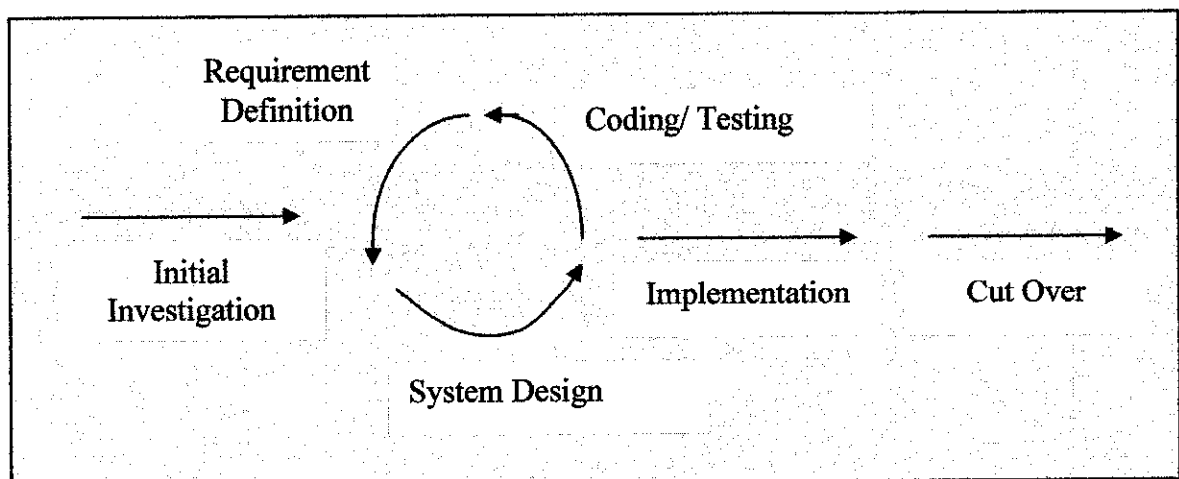


Figure 3.1: Prototype model



Prototyping works well in situations where project objectives are unclear, requirements are unstable, or users are not highly knowledgeable. There are six stages in this model as stated in below.

### **3.1.1 Initial Investigation**

In this stage, the analysis and initial investigation of this project has been done. This process involved research activities where author need to refer to journals, books, paper work, and websites and also respected lecturers. These resources have given important information and suggestion on how to get started with the system requirements and specifications. Whereby the topic of the project need to be clarified and need to be understood. The same process also involved in this activity, where author need to do research on the system. The project area of study also needs to be analyzed, whereby the area of study for this project is about the system and how to implement the knowledge sharing strategy into the system. The author has referred to the similar applications that implement the knowledge sharing strategy and analyze how the strategy is implemented into the system.

### **3.1.2 Requirement Definition**

Requirement definition is the stage to clarify the methods that are used in this project and also need to identify the approach that is used for this project. The requirements have been obtained from the Network Department of Sapura Technology Bhd. They have requested the author to develop this system for their asset management purposes during the Industrial Internship. The system has not been completed, so the author has decided to continue on developing and completing the system. The author has been provided with necessary data and information. The company also has defined the functions and features that they need. At

this stage, author has done research on how to manipulate the data to make it more organized and implement the knowledge sharing strategy to the system. The author has decided to include forum and discussion pages into the system, as an implementation of knowledge sharing. This part will be explained further in the next chapter. The tool used to develop the system is Macromedia Dreamweaver MX 2004.

### **3.1.3 System Design**

At this stage, the components of the system are defined and the system flows are designed. The designs consist of process flow and knowledge model design. The system flows and page layouts have been sketched to see roughly how the system operates. These page layouts are attached in the appendix. The system is also designed based on the knowledge management life cycle as presented in the Figure 3.2. This processes and activities are applied mostly in the forum and history section.

The first process is the knowledge capture. In this process, the intellectual capitals of employees are captured when they post their opinions and suggestions; for example about problem solving of computer hardware failure to the forum. The knowledge then stored in the database and can be searched or archived when they are needed. Next, the knowledge will be shared between other employees who joined the forum. This applied the knowledge sharing process. Other employees can search and archive for the stored knowledge. The suggestions and opinions are then discussed between employees to find more accurate solutions and decisions. In the knowledge application process, the suggestions that have been posted earlier are then applied to perform related activities; for example solving the computer hardware failure. The more accurate solutions that have been discussed are also applied. The more accurate solutions that have been produced during the

discussions are called the knowledge creation. This process includes the sharing of tacit knowledge, creating concepts, justifying concepts, building a prototype and cross-leveling knowledge. The new solution will then undergo the same process as the previous suggestions.

Figure 3.3 in page 13 shows the architecture of the system. Most of the activities will go through the same process. Firstly, user requests the information in the web site. For example the user searches for a data. Then the web server will query the requested data from the database server. The database server then will search the requested information in its storage. The result found then sent to the web server. The result then returned to the end user by displaying in the website. In the CMMS, the Web server is used as a knowledge sharing medium between employee and another employees. For example, the current user of a computer can find for the history of that computer when a problem occurs. He or she can archive for the possible failure and the solutions taken to solve the problem. This information can be retrieved from the database as explained in the processes above. This process applies the knowledge sharing technique.

In the forum section, the processes involved are about the same. The employee can create a topic that request suggestions and opinions about problem solving in certain condition from other employees. In this forum, they can discuss and share their opinions and knowledge in solving the issued problem. Every solution or opinion posted or discussed in the forum will be stored in the database. The other employees then can search for those solutions. They can use and manipulate the solution to create better solutions. Here is where the knowledge sharing is applied.

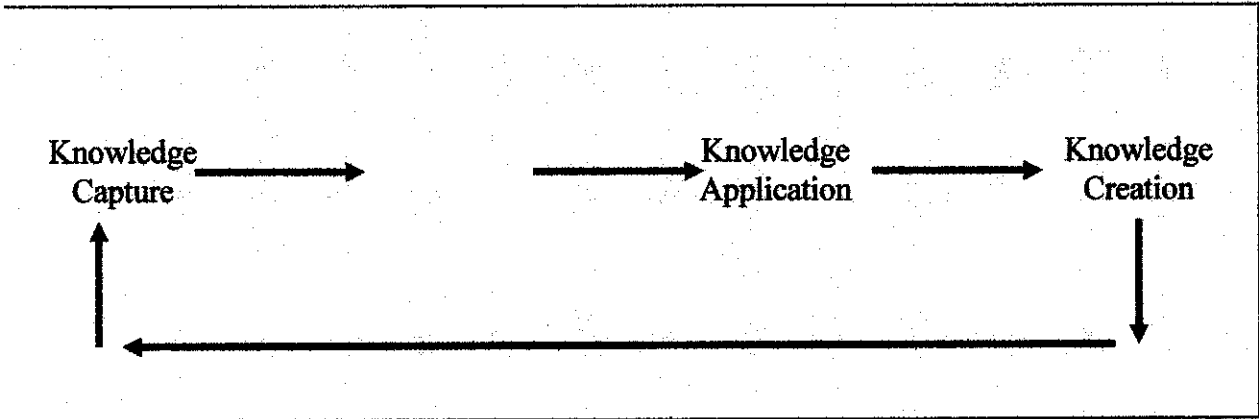


Figure 3.2: Knowledge Management Life Cycle (Jay Liebowitz, 2001, p.4)

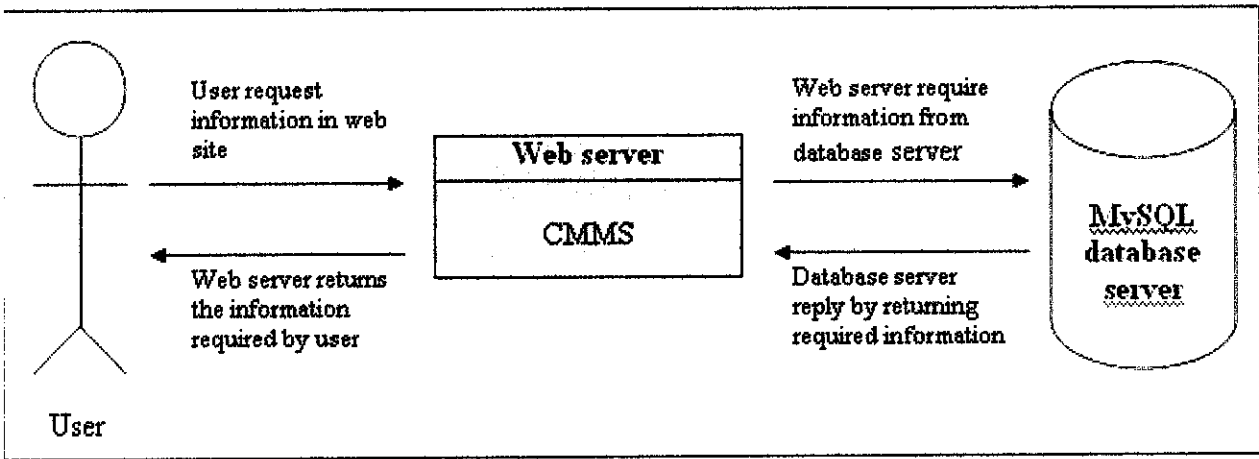


Figure 3.3: Architecture of CMMS

### 3.1.4 Coding/ Testing

At this stage, the system is modeled and developed using the selected tool, which is Macromedia Dreamweaver MX 2004. Firstly, the database has been modeled and created, and then only the system will be developed. After the completion of each phase, the system has been tested to detect for errors and unreliability. The system has been tested until there are no errors occur.

There are several types of testing that have been done during and after the CMMS development process. They are unit testing, interface testing,

system testing and acceptance testing. In the unit testing, the author's friend and she herself have tested the system whether the functions and features specified have been implemented. Each of the single features of CMMS has been tested and the errors are removed.

The interface testing is done by the author to check whether the components developed are work with each other or whether they communicate with each other, as specified in the system design. The tests are organized to check all the interfaces, until all the components have been built and interfaced to each other producing the whole system.

The system testing is done by the author and the author's supervisor to check if the CMMS delivers the features required. In this testing, the system is tested as a whole. The system has been tested based on the performance, volume, stress, documentation and robustness. For the performance, the system is measured whether performance criteria has met. For the volume, the system is tested whether it can handle large volume of information. In the stress test, the system is tested whether the peak volume of information can be handled. The documentation is tested whether it is usable for the system. For the robustness, the system is tested whether it remains stable under adverse circumstances.

After the system completed, the acceptance testing will be done by the peoples in the company, whether the system delivers what were requested.

The usability testing also will be done to test how well the user can understand, work with and use the system. This testing will be done after the system completion. This testing can tell author whether the system is user friendly and efficient. This testing involves the author's supervisor, friends and staff from the Sapura Technology Bhd.

### **3.1.5 Implementation**

Implementation phase is a stage where the final product is installed to the user. The user manual will also be included with this system. User can start to use the system. This system may be tested on the organization to test the effectiveness of the system. This is done during the product delivery.

### **3.1.6 Cut Over**

The cut over stage is actually the maintenance stage involves. The project will only be handed over to the supervisor and the organization itself. There is where the stage of cut over used to replace the maintenance stage because cut over itself explain the hand over the product to user. All the changes or future work that need to be done for the project will be carried out by future student or the company itself.

## **3.2 Procedures**

### **3.2.2 Research**

In-depth research on knowledge management, its concepts and CMMS have been done. Research on the requirements and functions required in the system also have been done in order to developed more effective and efficient system.

### **3.2.3 Discussion with supervisor**

Discussions with my supervisor, Miss Savita K Sugathan, have been done before proceeding with this project. Some ideas have been

proposed on how to start the system development and resources that can be accessed to obtain information about knowledge management.

### **3.3 Tools Required**

- 3.3.1. Hardware : Personal Computer and server
- 3.3.2. Software : Macromedia Dreamweaver MX 2004, Photo Editor
- 3.3.3. Server : Apache HTTP Server
- 3.3.4. Database : MySQL

## **CHAPTER 4**

### **RESULTS AND DISCUSSION**

As the knowledge gathering and system development process is still going on, there are a lot of things that author has found out and accomplished until the current moment. It is pretty much enlightening since there are more questions were answered and more problems seem to have its answer.

#### **4.1 Research Findings**

Upon the development of this project, the research has been done on the knowledge management and the CMMS. The methods that have been used are internet and reference books. The author has found some reference books and the content of those books make her understand better about the concept of knowledge management. Those books explain on the importance in managing knowledge and how to manage the knowledge well. It also explains on the knowledge engineering and knowledge management life cycles. It gave examples of the knowledge-based system and the systems that apply the knowledge management. These books also discuss on the knowledge management strategies.

As the author has studied and mentioned in the interim report, there are two types of knowledge, which are tacit and explicit knowledge. These types of knowledge are the main part that involve in the knowledge management. She



also has studied on the knowledge management and knowledge engineering life cycle. The life cycle is presented in Figure 3.2(p.10).

Besides doing research on the knowledge management, the author also have done research and re-studied on the asset management and the software itself, Computerized Maintenance and Management System (CMMS). The author has studied on the system architecture, system features, system requirements, workflow and notification and other related issues to the system and industry. The author has found more similar systems in the internet, studied the system and compares them with the system that will be developed. There are some companies that provide free trial asset management software. Those softwares have been downloaded and tested. As explained in the Literature Review chapter, pKADS( portable Knowledge Asset Management) also apply the knowledge sharing into the system. However, this system only focuses on the knowledge sharing, where it only manage the intellectual property of the organization. It helps organizations implement effective knowledge sharing practices. Compared to pKADS, the CMMS manage both assets and intellectual property in a system. It is the combination of asset management system and knowledge management. Therefore, the CMMS will be more efficient in managing both types of assets. The other asset management application is MX4™. It is a web-based application. The developer has used the advantages of Internet in implementing this system. But it did not provide the forum for discussions among its users as compared to the CMMS. So the tacit knowledge of the users cannot be shared among them. These reasons make the author need to develop the CMMS.

Based on her research, this software has been used widely to manage and control plant and equipment maintenance in modern manufacturing and service industries. Basically, CMMS need to be well specified to avoid the system failure. CMMS can be used to control the company's list of maintainable assets through an asset register, control accounting of assets, purchase price,

depreciation rates, etc, process condition monitoring inputs and many other purposes. CMMS can assist in managing the assets and equipment properly.

## **4.2 Result Discussion**

In meeting the project requirements, the end product prototype should be able to perform its functions. The prototype will be able to make the asset management easier and more effective.

The author started to develop the system based on the requirements and functions that have been used in the company during her Industrial Internship period. Firstly, the author has re-defined the system requirements and functions as furthered explained in the previous chapter. The database of the system is first developed. The system is then developed based on the system design and page layouts that have been sketched. The JavaScript menus have been added to each page for easier and faster navigation. The author also has built the page with the contents required.

There are some problems that occurred during the development processes. There are bugs and errors in the programs which the author needs to take some times to troubleshoot. There are no problem occurs during the server installation since the author used the software package that contain Apache and MySQL server. The connection between those servers did not have to be configured.

The uniqueness of this system is the system is able store the history of the assets, which is the information that related to the assets such as the previous owner, the problem occurs, and the solutions taken to repair the assets or equipments. The database will automatically create new data when the data of assets have been updated. This means the old data of the assets will not be overwritten and can be archived when it is needed.

The author also has added the forum to the system. The purpose of the system is to enable user of the system to share their knowledge and discuss on the possible solutions. The forum will enable users to share their knowledge with others. They can discuss their problems in this section and others can help by giving opinions and possible solutions. These discussion sessions will be stored in the database and can be archived when they want to refer back to the solutions. With this forum, user can express information that they cannot tell verbally. What people have in mind are more that what they can tell. Based on this concept, this system has implemented the knowledge sharing strategy.

The completed pages or layouts will be attached in the appendix.

## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 Conclusion**

The research and studies are done to acquire more information and to understand better about the knowledge management and the system itself. There are many resources found in order to specify the system specifications and requirements. The concepts of the system need to be understood and well specified in order to develop efficient and reliable software with the minimum failures. There are many functions of CMMS that will benefit the company as long as it was properly specified.

The research and studies of these two aspects have taken much time especially in understanding the concept of the knowledge management. It consume some times in creating the ideas on how to implement the knowledge management into the system.

Therefore, all of the objectives of this project have been met. As stated above, the author has done research on the knowledge management area, focusing on the knowledge sharing concept. The author also has developed the CMMS and implemented the knowledge management concept into the CMMS. This implementation has been done through the forum section of the CMMS.

#### **5.2 Recommendation**

The Computerized Maintenance and Management System will be more efficient if it is enhanced and more usable functions are added to the system. It will be more reachable if we enhance the system to integrate with mobile devices such as PDA (Personal Digital Assistant) and WAP-enabled mobile phone. The main idea is the system can be accessed using the computer and the mobile devices. This means the system will be divided into two same function systems. The first one is using regular internet access and the other one is using WAP access. This type of access will enable user to access the system without having the computer at that time. This makes the task easier without requiring complicated and heavy devices.

Since we will have the access through internet and WAP, the security of the system also will be enhanced to prevent the system from being accessed by unauthorized users. This is important to protect those assets data from being changed without permission. The layered security protocol will be implemented into the system to measure the system is highly protected.

If there is more than one user who handles the system, one of them may do not know that there are new data have been added into the database or the data have been updated. Maybe the other colleague forgot to inform him/her. To prevent this from happened; the notification will be send to the other user of the system when there are any updates on the database. The notification will be send through e-mail telling that the data has been updated or added by whom and at what time.

There are more functions that will be added soon in order to make the system more efficient and run at minimum failure. These recommendations will be done in the future enhancement, not in this phase of project. The enhancement may be done by author or another people in the future.

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## **APPENDICES**

Task Name		Duration	Start	Finish	Jun 18, '06							Jun 25, '06						
ID					S	M	T	W	T	F	S	S	M	T	W			
1	Gather information about CMMS	7 days	June 19, 2006	June 27, 2006														
2	Determine the system	5 days	June 26, 2006	June 30, 2006														
3	System specifications	1 day	June 26, 2006	June 26, 2006														
4	System requirements	1 day	June 26, 2006	June 26, 2006														
5	System funtions	1 day	June 27, 2006	June 27, 2006														
6	System methodology	1 day	June 28, 2006	June 28, 2006														
7	System architechture	1 day	June 30, 2006	June 30, 2006														
8	Install servers and development tools	4 days	July 3, 2006	July 6, 2006														
9	Apache server	1 day	July 3, 2006	July 3, 2006														
10	MySQL server	2 days	July 3, 2006	July 4, 2006														
11	PHP	1 day	July 5, 2006	July 5, 2006														
12	Macromedia Dreamweaver MX 2004	1 day	July 6, 2006	July 6, 2006														
13	Create database	5 days	July 10, 2006	July 14, 2006														
14	Determine tables needed	3 days	July 10, 2006	July 12, 2006														
15	Create new database	2 days	July 13, 2006	July 14, 2006														
16	Develop the system	59 days	July 17, 2006	October 5, 2006														
17	Determine pages needed in the system	3 days	July 17, 2006	July 19, 2006														
18	Sketch the page layout	3 days	July 20, 2006	July 24, 2006														
19	Create first page	1 day	July 21, 2006	July 21, 2006														
20	Create result page for search function	2 days	July 24, 2006	July 25, 2006														
21	Create add page	2 days	July 27, 2006	July 28, 2006														
22	Create modify page	1 day	July 31, 2006	July 31, 2006														
23	Greate summary page	2 days	August 10, 2006	August 11, 2006														
24	Create status page	3 days	August 7, 2006	August 9, 2006														
25	Create forum pages	8 days	September 26, 2006	October 5, 2006														
26	Test the system	33 days	August 23, 2006	October 6, 2006														
27	Final presentation	1 day	October 12, 2006	October 12, 2006														

Project: fyp part 2  
Date: November 3, 2006

Task

Split

Progress

Milestone

Summary

Project Summary

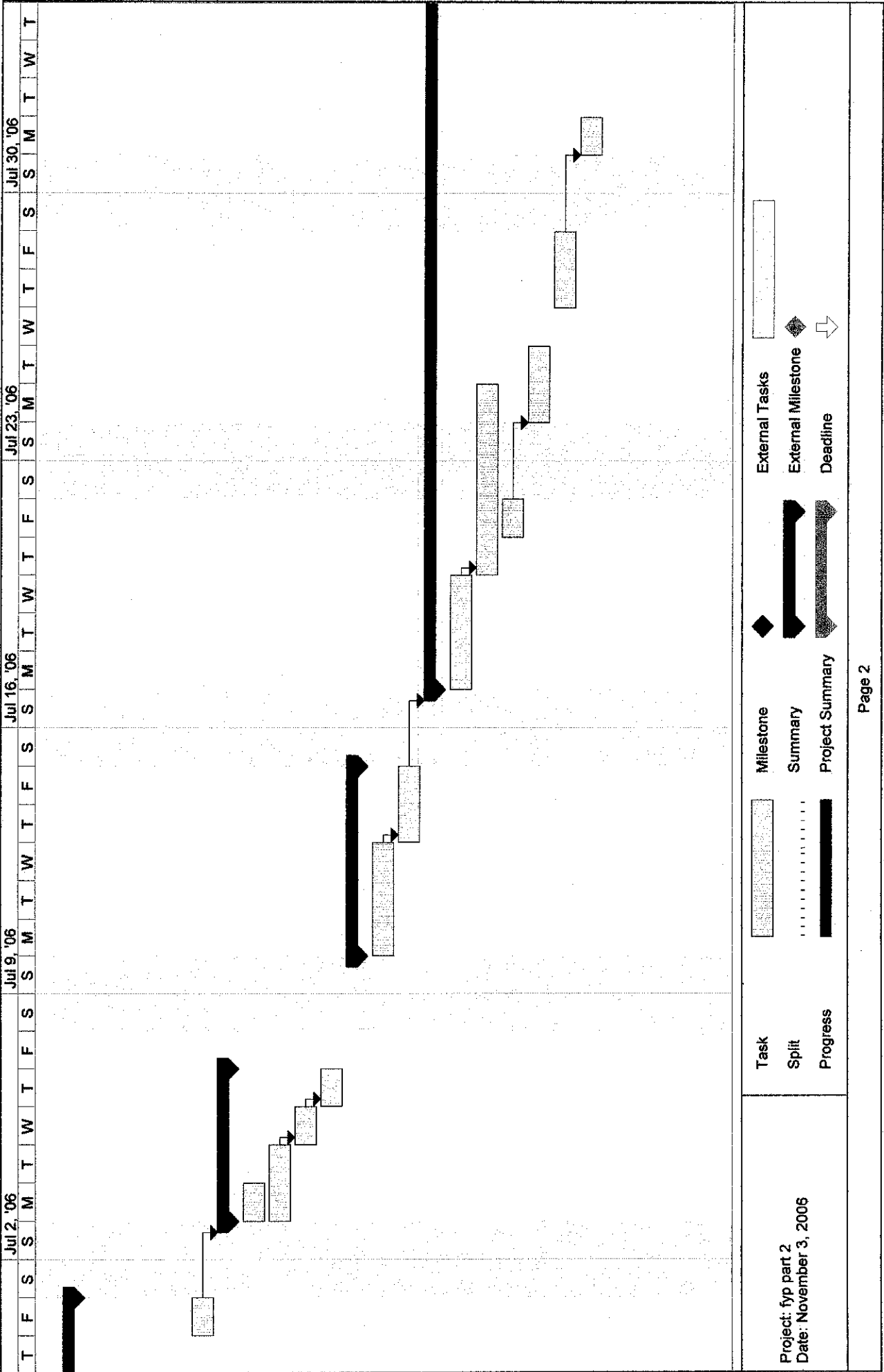
External Tasks

External Milestone

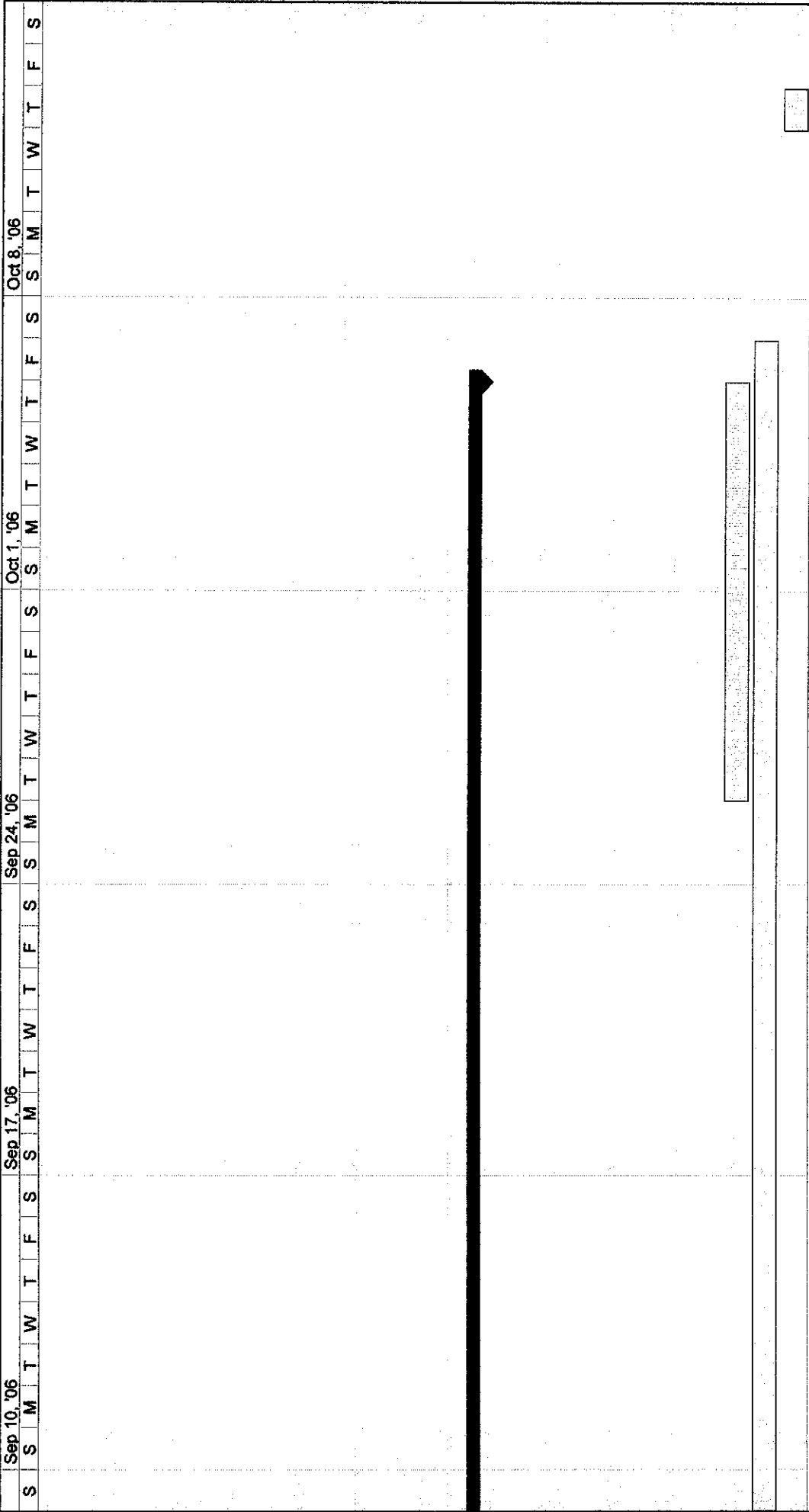
Deadline

Page 1





[illegible]



Project: fyp part 2  
Date: November 3, 2006

Task

Split

Progress

Milestone

Summary

Project Summary

External Tasks

External Milestone

Deadline

Screen snapshots of CMMS

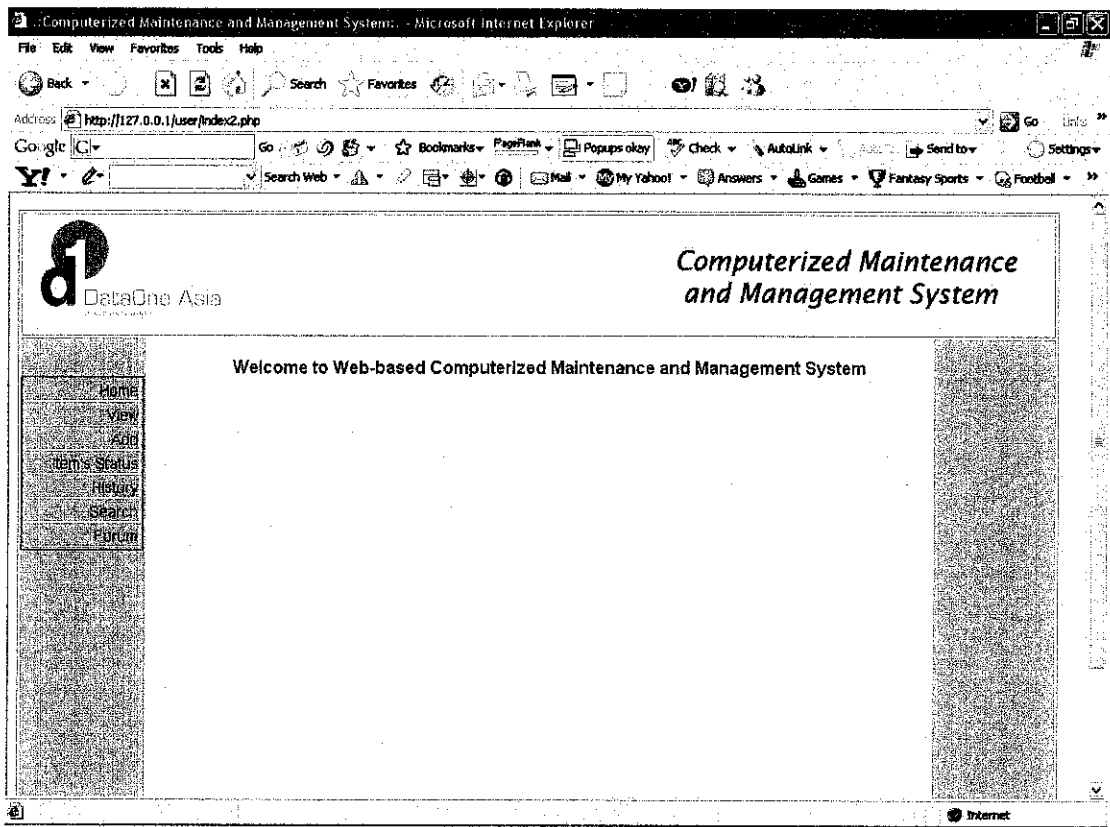


Figure 6.1: Welcome page



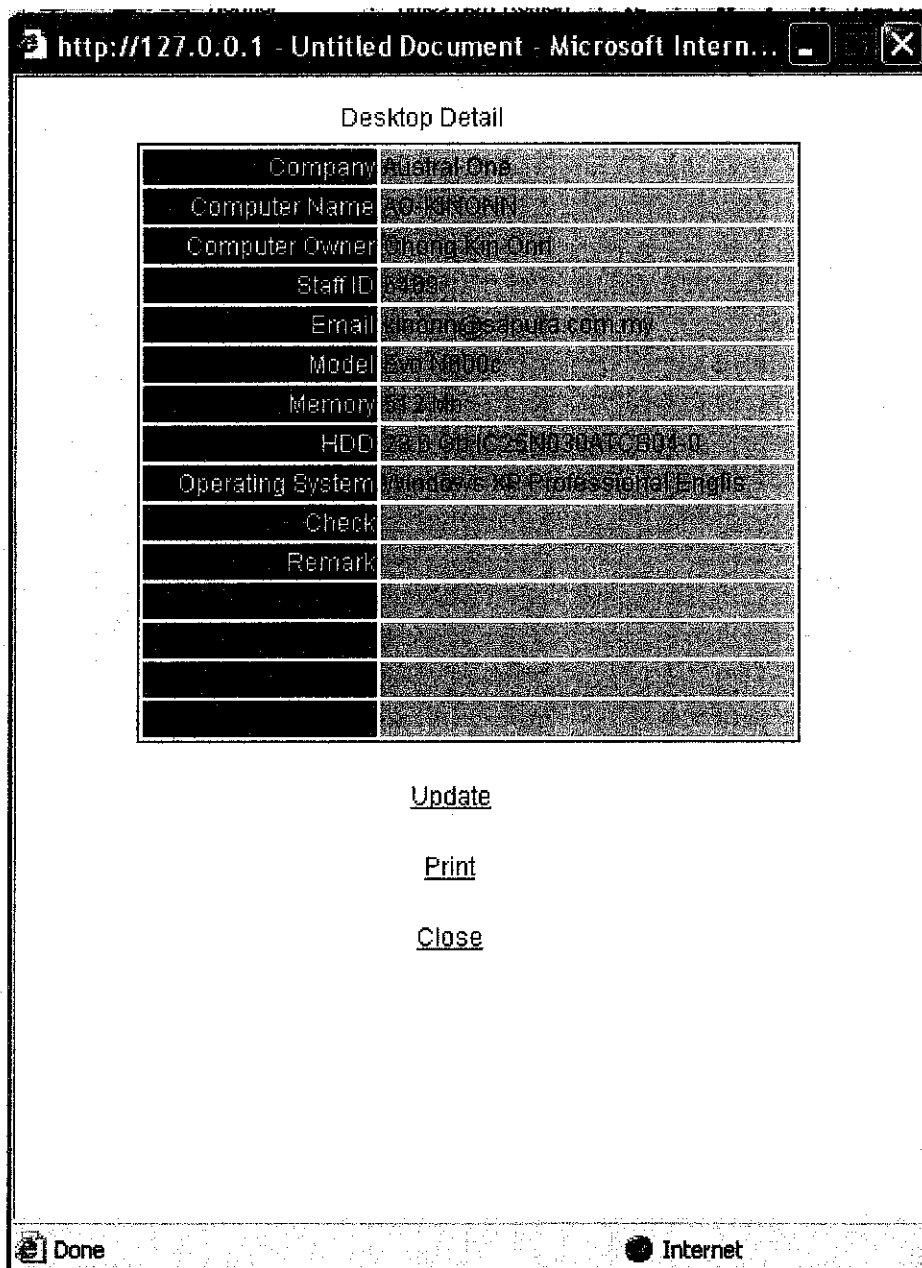


Figure 6.3: Record detail page

http://127.0.0.1 - Untitled Document - Microsoft Intern...

Desktop Update

Company	Austral One
Computer Name	AO-KINONN
Computer Owner	Chong Kin Onn
Staff ID	6469
Email	kinonn@sapura.com.my
Model	Evo N600c
Memory	512 Mb
HDD	28.6 Gb IC25N030ATCS04-0
Operating System	Windows XP Professional Englis
Check	
Remark	

Update record

[Update](#)

[Print](#)

[Close](#)

Done Internet

Figure 6.4 : Record update page

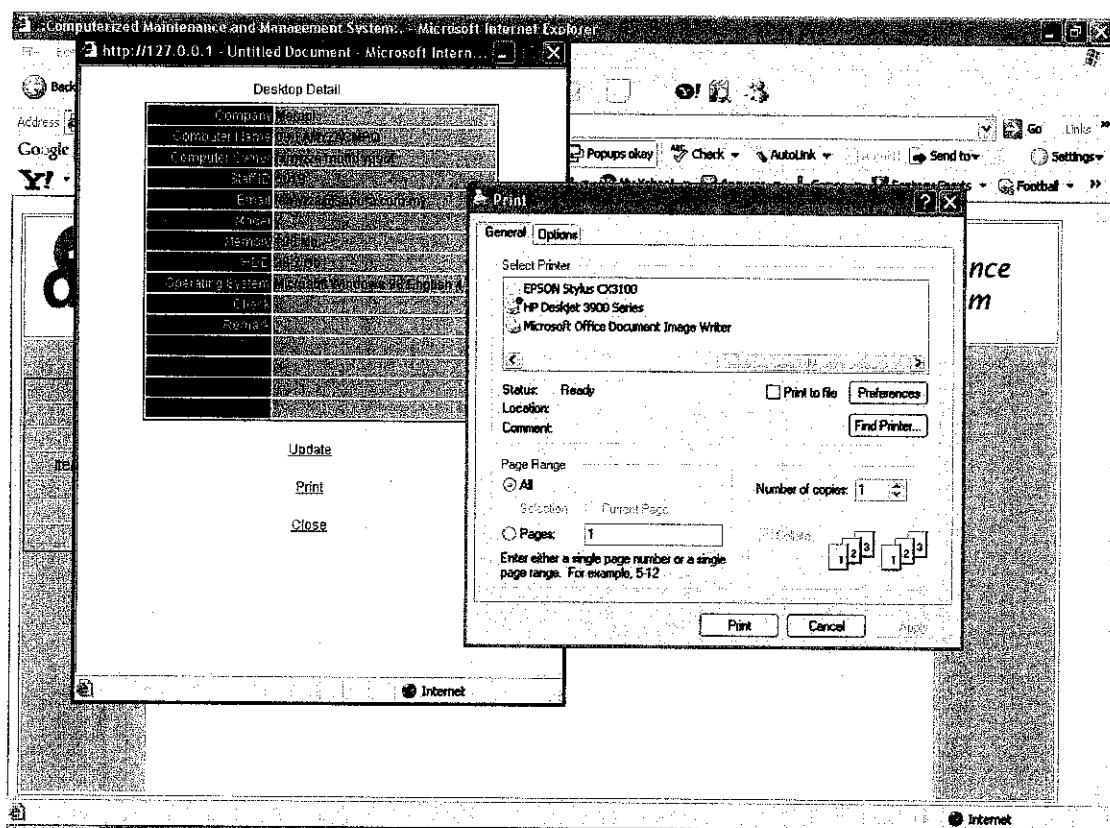


Figure 6.5 : Print record page



Computerized Maintenance and Management System: Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites Print Mail News RSS Feeds

Address http://127.0.0.1/user/adddesktop.php Go Links

Google G Go Bookmarks PageRank Popups okay Check AutoLink Send to Settings

Y! Search Web Mail My Yahoo! Answers Games Fantasy Sports Football

Add new desktop

Model:	
Brand:	
Make:	
Serial Number:	
Operating System:	
Operating System type:	No sticker
Product Key:	
HDD:	
RAM:	
Network Card:	
Video:	
Monitor Serial Number:	
Keyboard Serial Number:	
Mouse Serial Number:	
Status:	Active
Client ID:	

Reset Insert record

Figure 6.6 : Add new record page

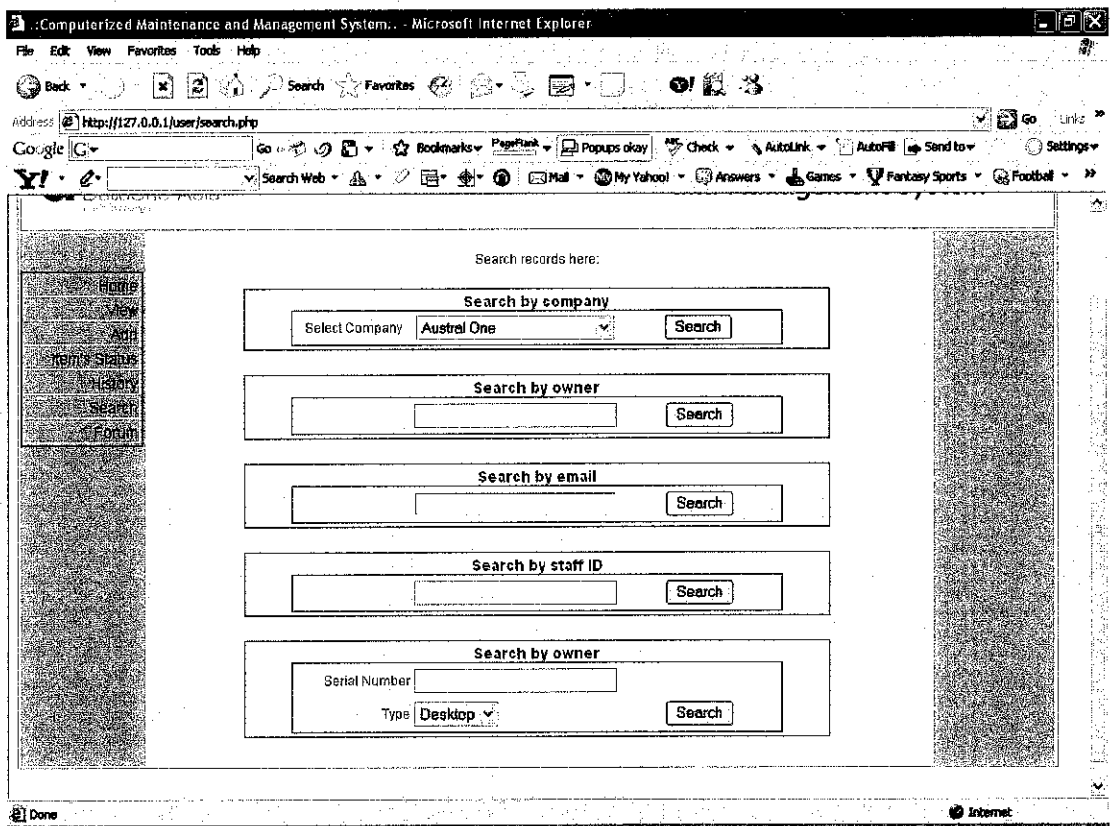


Figure 6.7 : Search page

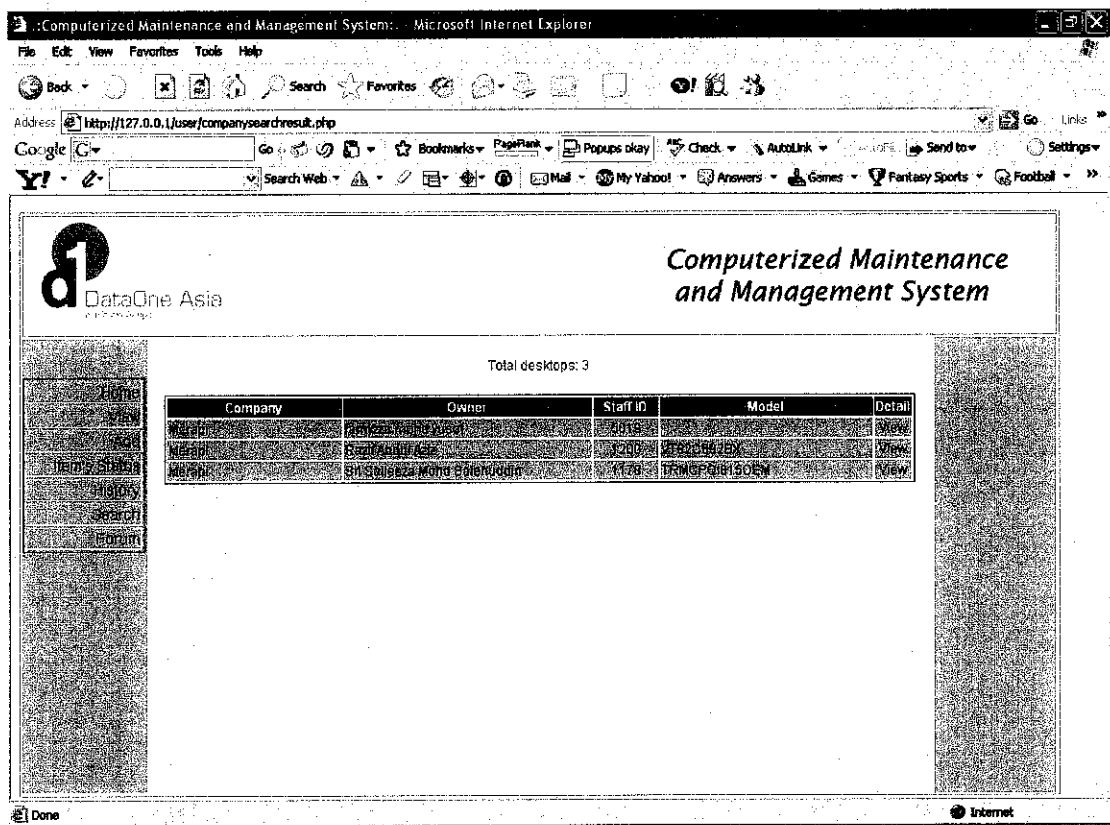


Figure 6.8 : Search result page

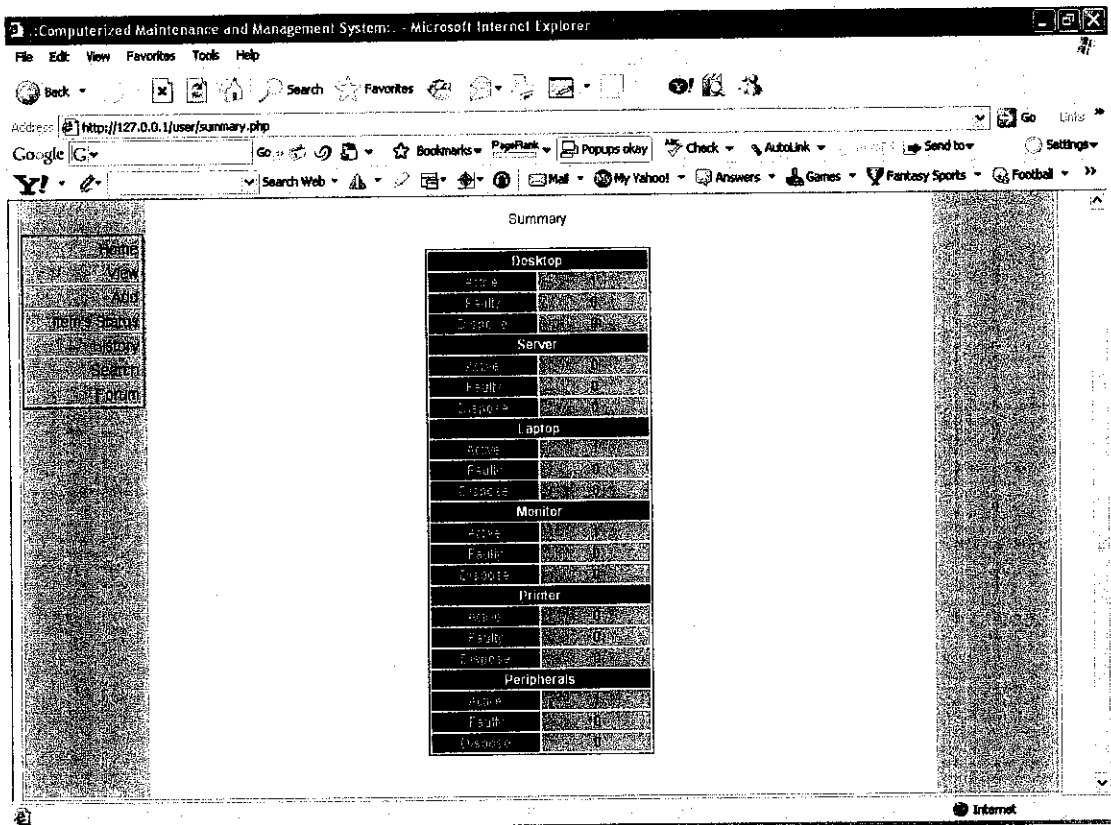


Figure 6.9 : Summary page

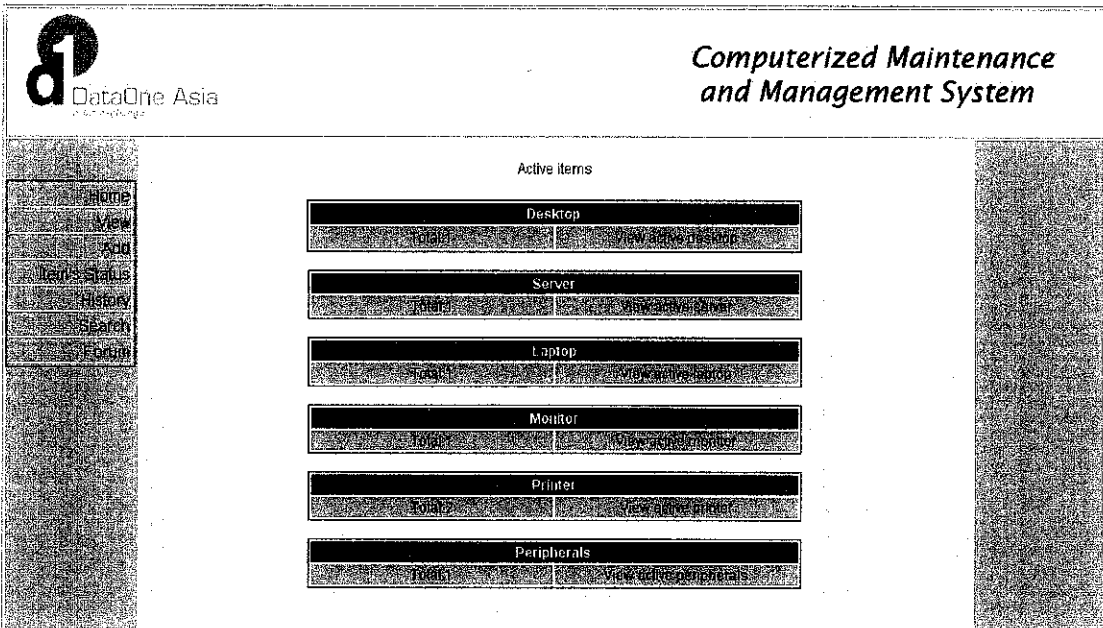


Figure 7.0: Active items

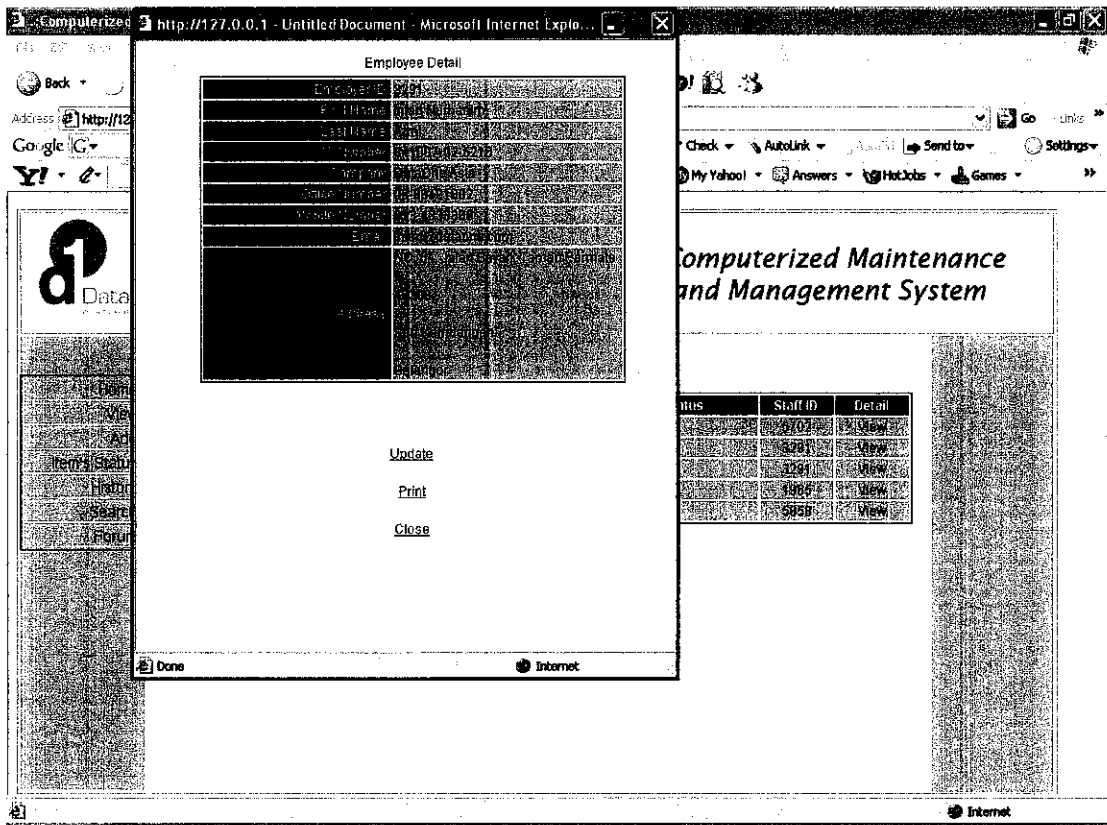


Figure 7.1: Staff details

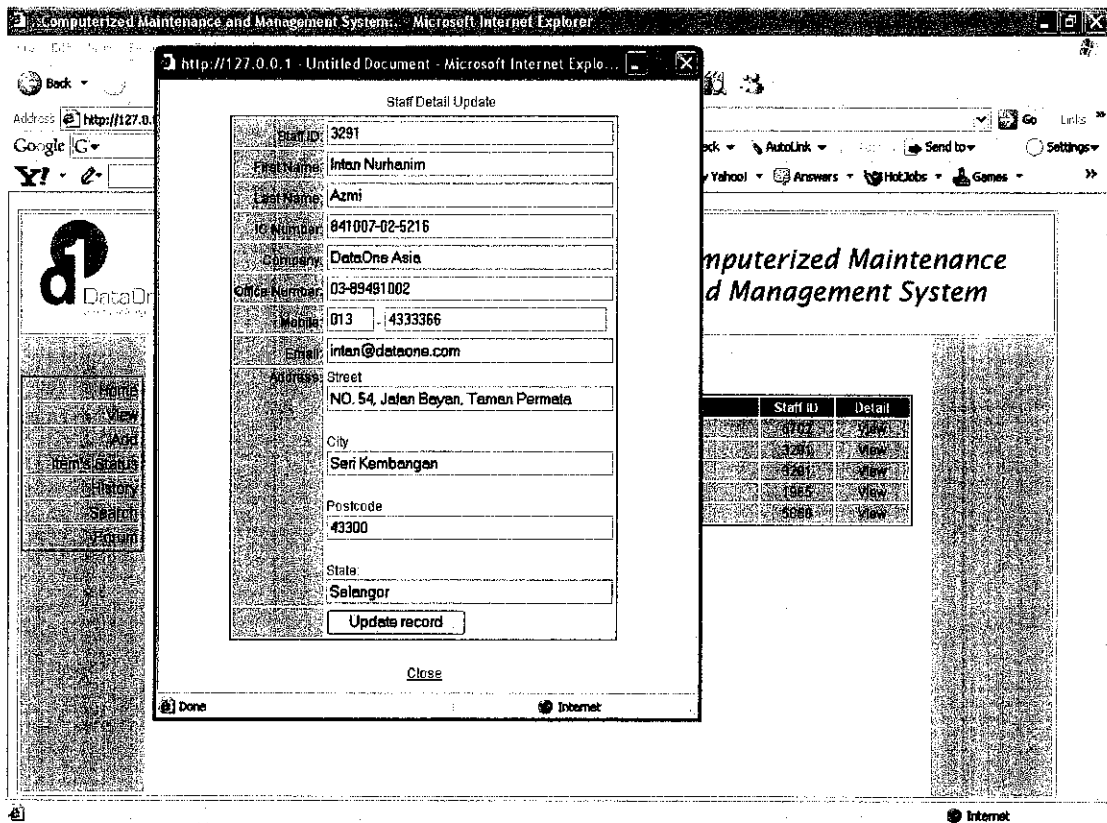


Figure 7.2: Staff information update